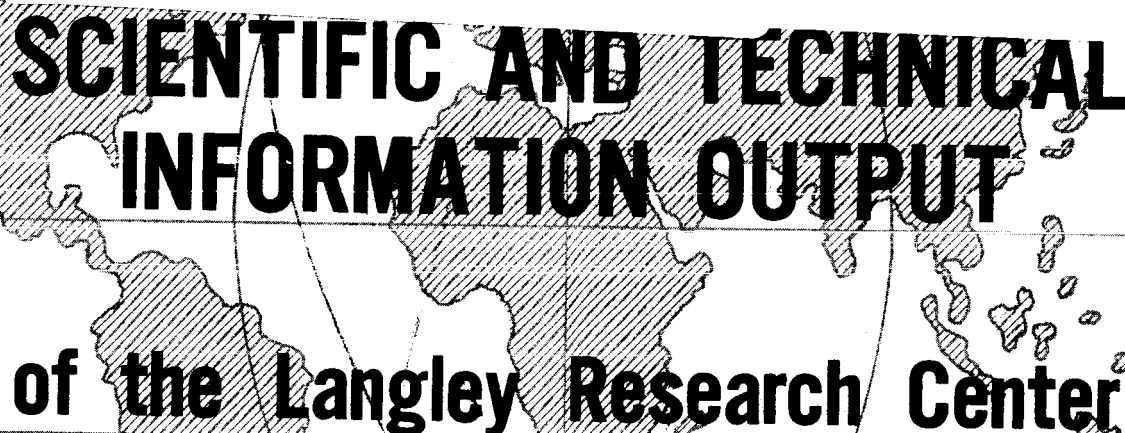
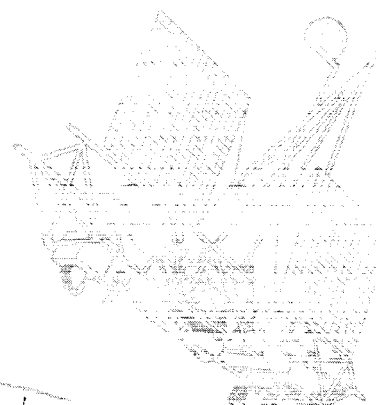




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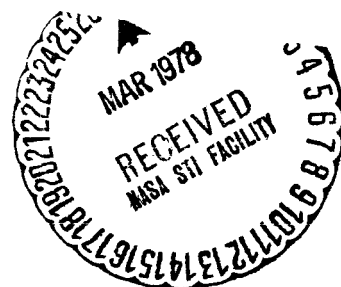
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PREFACE

The Space Act of 1958 directs NASA to: . . . "Provide for the widest practical and appropriate dissemination of information concerning its activities and the results thereof."

In complying with the Act and also meeting their professional obligations, the Langley Research Center's 1386 scientists and engineers, supported by 1700 other employees, vigorously disseminate their research results through reports and articles and meeting presentations.

This document is a compilation of the Scientific and Technical Information that the Langley Research Center has produced during the calendar year of 1977. Included in this listing are NASA Reference Papers, Technical Notes, Technical Papers, Technical Memorandums, Special Publications, Conference Publications, Contractor Reports, Journal Articles, and Technical Presentations made at Society meetings. NASA formal reports included in this listing are those that have been mailed and distributed to the ultimate user. In selecting Journal Articles, only those articles which were published in a Journal during the past calendar year are included. Similarly, material presented at Society meetings was presented during the calendar year 1977.

Mere numbers are not a reliable criterion of productivity; nevertheless, the following figures are impressive. Output totals for 1977 are: Formal Reports - 205; Contractor Reports - 283; Articles and Meeting Presentations - 599; High-Number TM X's and Quick-Release Technical Memorandums - 107.

The material presented here is listed first by Division and then under the following headings: (a) Formal Reports, (b) Contractor Reports, (c) Articles and Meeting Presentations, and (d) High-Number TM X's and Quick-Release Technical Memorandums. Under each heading, the material is listed by authors in alphabetical order. If a report has more than one author and these authors are from different Divisions, the report is listed only once, under the senior author's name.

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NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

CALENDAR YEAR 1977

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1. Kahlbaum, William M., Jr.: Analysis and Design of a Refractive Virtual Image System. NASA TP-1066, 1977.
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3. Lambiotte, Jules J., Jr.: Effect of Virtual Memory on Efficient Solution of Two Model Problems. NASA TM X-3512, 1977.
4. Parrish, Russell V.: Effect of Digitally Computed Drives on Performance of Continuous Linear Systems. NASA TN D-8518, 1977.
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6. Schiess, James R.: Vectorization of Linear Discrete Filtering Algorithms. NASA TM X-3527, 1977.
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1. Barker, L. Keith: Effect of Coefficient Changes on Stability of Linear Retarded Systems With Constant Time Delays. NASA TN D-8412, 1977.
2. Cannaday, Robert L.; and Suit, William T.: Effects of Control Inputs on the Estimation of Stability and Control Parameters of a Light Aircraft. NASA TP-1043, 1977.
3. Klein, Vladislav; and Schiess, James R.: Compatibility Check of Measured Aircraft Responses Using Kinematic Equations and Extended Kalman Filter. NASA TN D-8514, 1977.
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7. Miller, G. Kimball, Jr.; and Riley, Donald R.: The Effect of Vision-Motion Time Delays on Pilot Performance in a Simulated Pursuit Tracking Task. NASA TN D-8364, 1977.
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3. Harvey, C. A.; and Pope, R. E.: Study of Synthesis Techniques for Insensitive Aircraft Control Systems. NASA CR-2803, 1977. (NAS1-13680 Honeywell Inc.)
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7. Mout, Michael L.; Burgin, George H.; and Walsh, Michael J.: Use of Sensitivity Analysis to Predict Pilot Performance as a Function of Different Displays. NASA CR-2906, 1977. (NAS1-14416 Decision Science, Inc.)
8. Stein, Gunter; and Hartmann, Gary L.: F-8C Adaptive Control Extensions. NASA CR-2881, 1977. (NAS1-13383 Honeywell Inc.)

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2. Armstrong, Ernest S.: A Root Locus Property of the Extended Bass Algorithm. AIAA Journal, November 1977.
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4. Dunn, H. J.; and Montgomery, R. C.: A Moving Window Parameter Adaptive Control System for the F8-DFBW Aircraft. IEEE Transactions on Automatic Control, October 1977.
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12. O'Bryan, Thomas C.; and Goode, Maxwell W.: Some Flight Experience With a Research Rocket System Installed on a Light Airplane. Presented at the AIAA 4th General Aviation Technologyfest, November 1977.
13. Queijo, Manuel J.: Stability and Control Research at Langley. Presented to the AIAA Student Branch of the University of Virginia, November 1977.
14. Phillips, William H.: Selected Projects on Guidance and Control Research at Langley Research Center. Presented at the Society of Automotive Engineers Meeting, October 1977.
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17. Spady, Amos A., Jr.: Preliminary Report on Airline Pilot Scan Patterns During Simulated Instrument Landing Approaches. Presented at the 1977 Conference on Eye Movements and Psychological Processes, February 1977.
18. Spady, Amos A., Jr.: Airline Pilot Scanning Behavior During Approaches and Landing in a Boeing 737 Simulator. Presented at the AGARD 25th Guidance and Control Panel Meeting/Symposium on "Guidance and Control Design Considerations for Low Altitude and Terminal Area Flight," October 1977.
19. Szalai, Kenneth J.; Felleman, Philip G.; Gera, Joseph; and Glover, Richard D.: Design and Test Experience With a Triply Redundant Digital Fly-by-Wire Control System. AGARDograph on Integrity in Flight Control Systems, April 1977.
20. Waller, Marvin C.: Application of Pilot Scanning Behavior to Integrated Display Research. Presented at the Society of Flight Test Engineers 1977 Symposium, August 1977.

21. Waller, Marvin C.; and Flowers, Garry S.: Dwell Time Scanning Characteristics of Pilots During a Simulated Instrument Approach. Presented at the 1977 Conference on Eye Movements and Psychological Processes, February 1977.
22. Wells, William R.; and Queijo, Manuel J.: Simplified Unsteady Aerodynamic Concepts, With Application to Parameter Estimation. Presented at the AIAA 4th Atmospheric Flight Mechanics Conference, August 1977.
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2. Phillips, William H.; and Lichtenstein, Jacob H.: Comparison of Effects of Unsteady Lift and Spanwise Averaging in Flight Through Turbulence. NASA TM X-74028, 1977.
3. Shaughnessy, J. D.; and Pardue, M. D.: Helicopter Sling Load Accident/Incident Survey: 1968. NASA TM X-74007, 1977.

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1. Blume, Hans-Juergen C.; Kendall, Bruce M.; and Fedors, John C.: Sea-Surface Temperature and Salinity Mapping From Remote Microwave Radiometric Measurements of Brightness Temperature. NASA TP-1077, 1977.
2. Burcher, Ernest E.; Huck, Friedrich O.; Wall, S. D.; and Woehrle, Susan B.: Performance Evaluation of a Quasi-Microscope for Planetary Landers. NASA D-8370, 1977.
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4. Jobson, Daniel J.; Katzberg, Stephen J.; and Spiers, Robert B., Jr.: Signal-to-Noise Ratio Analysis and Evaluation of the Hadamard Imaging Technique. NASA TN D-8377, 1977.
5. Kelly, W. Lane, IV; Burcher, Ernest E.; and Skolaut, Milton W., Jr.: An Optical Profilometer for Spatial Characterization of Three-Dimensional Surfaces. NASA TP-1012, 1977.
6. Kershner, David D.: A Suspended Anemometer System for Measuring True Airspeed on Low-Speed Airplanes. NASA TN D-8523, 1977.
7. Ostroff, Aaron J.; and Wood, Brian: Computer Simulation Incorporating a Helicopter Model for Evaluation of Aircraft Avionics Systems. NASA TM X-3491, 1977.

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1. Belsterling, Charles A.: Wind Tunnel Tests of the Dynamic Characteristics of the Fluidic Rudder. NASA CR-145142, 1977. (NAS1-13930 Franklin Institute Research Laboratory)
2. Besser, P. J.; et al.: Development of a High Capacity Bubble Domain Memory Element and Related Epitaxial Garnet Materials for Application in Spacecraft Data Recorders: Item I - Development of a High Capacity Memory Element. NASA CR-144983, 1977. (NAS1-12981 Rockwell International Corporation)
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5. Eastman, M. P.; Bruno, G. V.; and Lawson, J. O.: ESR Studies of the Slow Tumbling of Vanadyl Spin Probes in Nematic Liquid Crystals. NASA CR-145201, 1977. (NSG-1316 University of Texas at El Paso)
6. Goldstein, H. W.; and Grenda, R. N.: A Study of Selected Environmental Quality Remote Sensors for Free Flyer Missions Launched From the Space Shuttle. NASA CR-145252, 1977. (NAS1-13815 General Electric Company)
7. Halyo, Nesim: Development of a Digital Automatic Control Law for Steep Glideslope Capture and Flare. NASA CR-2834, 1977. (NAS1-12754-2 University of Virginia)
8. Harris Corporation: AAFE Large Deployable Antenna Development Program - Executive Summary. NASA CR-2894, 1977. (NAS1-13943 Harris Corporation)
9. Hecht, Herbert: Measurement, Estimation and Prediction of Software Reliability. NASA CR-145135, 1977. (NAS1-14392 The Aerospace Corporation)
10. Hecht, H.; Sturm, W. H.; and Trattner, S.: Reliability Measurement During Software Development. NASA CR-145205, 1977. (NAS1-14392 The Aerospace Corporation)
11. Kriegler, F.; Marshall, R.; and Sternberg, S.: MIDAS, Prototype Multispectral Interactive Digital Analysis System for Large Area Earth Resources Surveys - Volume II: Charge Coupled Device Investigation. NASA CR-145166, 1977. (NAS1-13128 Environmental Research Institute of Michigan)
12. Love, A. W.: Definition Study of a Microwave Radiometer System for the ATL Atmospheric Module. NASA CR-145242, 1977. (NAS1-14116 Rockwell International Corporation)
13. Meyer, John F.: Models and Techniques for Evaluating the Effectiveness of Aircraft Computing Systems. NASA CR-145270, 1977. (NSG-1306 University of Michigan)
14. Pines, S.; Schmidt, S. F.; and Mann, F.: Automated Landing, Rollout, and Turnoff Using MLS and Magnetic Cable Sensors. NASA CR-2907, 1977. (NAS1-14311 Analytical Mechanics Associates Inc.)
15. Research Triangle Institute: Study of the Impact of Air Traffic Management Systems on Advanced Aircraft and Avionic Systems: Microwave Landing System Simulation Task. NASA CR-145241, 1977. (NAS1-11298 Research Triangle Institute)
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17. Salter, Richard J., Jr.: A Microcomputer-Based Low-Cost Omega Sensor Processor. NASA CR-145178, 1977. (NGR 36-009-017 Ohio University)
18. Stonestreet, William M.; and Marzetta, Thomas L.: An Algorithm for the Automatic Synchronization of Omega Receivers. NASA CR-145228, 1977. (NAS1-14391 The Charles Stark Draper Laboratory, Inc.)

19. Verber, C. M.; Vahey, D. W.; Wood, V. E.; Kenan, R. P.; and Hartman, N. F.: Feasibility Investigation of Integrated Optics Fourier Transform Devices. NASA CR-2869, 1977. (NAS1-13802 Battelle Memorial Institute)
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21. Wentz, Frank J.: Radar Backscattering From a Sea Having an Anisotropic Large-Scale Surface. NASA CR-145278, 1977. (L-24420A Frank J. Wentz and Associates)

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1. Agrawal, Pradeep K.; and Bailey, M. C.: An Analysis Technique for Microstrip Antennas. IEEE Transactions on Antennas and Propagation, November 1977.
2. Agrawal, P. K.; Kauffman, J. F.; and Croswell, W. F.: A Technique to Calculate the Radiation Patterns of Large Spherical Reflector Antennas. Presented at the 1977 IEEE/AP-S Symposium, June 1977.
3. Bailey, M. C.: A Broad-Beam Circularly-Polarized Antenna. Presented at the 1977 IEEE/AP-S Symposium, June 1977.
4. Batson, Vernon M.: Remotely Generated In-Flight Displays Using a Ground-Based Interactive Graphics Display System. Presented at the Adage Graphics Exchange - 1977 Spring Meeting, May 1977.
5. Bavuso, Salvatore J.: Intermittent/Transient Fault Analysis in Digital Systems. Presented at the Johns Hopkins University Workshop, March 1977.
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8. Blume, H.-J. C.: Noise Calibration Repeatability of an Airborne Third-Generation Radiometer. IEEE Transactions on Microwave Theory and Techniques, October 1977.
9. Blume, Hans-Juergen C.; Kendall, Bruce M.; and Fedors, John C.: Measurement of Ocean Temperature and Salinity Via Microwave Radiometry. Boundary-Layer Meteorology, 1977.
10. Blume, H.-J. C.; Love, A. W.; Van Melle, M. J.; and Ho, W. W.: Radiometric Observations of Sea Temperature at 2.65 GHz Over the Chesapeake Bay. IEEE Transactions on Antennas and Propagation, January 1977.

11. Bryant, Wayne H.: VTOL Approach and Landing Technology Development Using a ROLM 16/64 Computer. Presented at the First Annual ROLM Users' Group Meeting, October 1977.
12. Campbell, Thomas G.: Large Deployable Antenna Technology at the Langley Research Center. Presented at the NASA/DOD Large Space Structures Conference, March 1977.
13. Crouch, R. K.; Meredith, B. D.; Kelly, W. L., IV; and Lina, L. J.: Development of LED Display for Solo Instrument Navigation. Presented at the 1977 Annual Meeting of the Virginia Academy of Science, May 1977.
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15. Garner, H. D.: Fluidic Autopilots for Light Aircraft. Presented at the 25th Annual Experimental Aircraft Association Sport Aviation Convention and Exhibition, August 1977.
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24. Jones, W. Linwood; and Schroeder, L. C.: Radar Backscatter From the Ocean: Dependence on Surface Friction Velocity. Published in Boundary-Layer Meteorology, December 1977.
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28. Parks, Frank G.; and Bailey, M. C.: A Low Sidelobe Microstrip Array. Presented at the 1977 IEEE/AP-S Symposium, June 1977.
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30. Ross, Duncan; and Jones, W. Linwood: On the Relationship of Radar Backscatter to Windspeed and Fetch. Published in Boundary-Layer Meteorology, December 1977.
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35. Weissman, David E.; and Johnson, James W.: Dual Frequency Correlation Radar Measurements of the Height Statistics of Ocean Waves. IEEE Transactions on Antennas and Propagation - Special Issue on Radio Oceanography, January 1977.

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1. Bement, Laurence J.: RSRA's Emergency Escape System. Presented at the Naval Aviation Rotary Wing Symposium, February 1977.
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5. Cuddihy, William F.: Project Viking. Presented at the Powercon 4 Conference, May 1977.
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No high-number TM X's and quick-release technical memorandums.

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No formal reports.

B. Contractor Reports

No contractor reports.

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D. High-Number TM X's and Quick-Release Technical Memorandums

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No formal reports.

B. Contractor Reports

No contractor reports.

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No formal reports.

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D. High-Number TM X's and Quick-Release Technical Memorandums

No high-number TM X's and quick-release technical memorandums.

XXII. PUBLICATIONS FOR OFFICE OF DIRECTOR FOR STRUCTURES

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No formal reports.

B. Contractor Reports

No contractor reports.

C. Articles and Meeting Presentations

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